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LERNER GREENBERG STEMER LLP
P O BOX 2480
HOLLYWOOD, FL 33022-2480

EXAMINER	
MONDT, JOHANNES P	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/715,069
Filing Date: November 17, 2003
Appellant(s): STELLWAG ET AL.

Lawrence A. Greenberg (29,308)
LERNER GREENBERG STEMER LLP
Post Office Box 2480
Hollywood, Florida 3302202480
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 02/21/2007 appealing from the Office action mailed 7/14/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief. However, the definitions of the Real Parties of Interest have been misspelled. Examiner assumes said Real Parties of interest to be FRAMATOME (instead of "FRAMTOME") ANP GmbH of Erlangen, Germany and ENBW Kraftwerke AG of Philippsburg (instead of Phillipsburg), Germany.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

Claim 4 contains substantial errors as presented in the Appendix to the brief (the verbiage "and carrying the alcohol into a condensate or feedwater system and carrying" (lines 2-3 of claim 4 as represented in the Claims Appendix of the Appeal Brief should be replaced by "and carrying").

(8) Evidence Relied Upon

5,818,893	HETTIARACHCHI	10-1998

Knovel Critical Tables, table entitled "Physical Constants and Thermodynamics of Phase Transition", physical constants for Pd acetylacetatonate and Pt

acetylacetonate. From www.knovel.com, Knovel Corporation, 13 Eaton Ave., Norwich, NY 13815 (USA).

Not relied upon for the rejections, and not needed for said rejections, but providing background information about the chemical composition of Pd-acetylacetonate and in particular its dimensions and density, examiner refers in the Examiner Answer to the following article:

Knyazeva et al, "Crystal chemical data on chelate compounds of β-diketones. VI. Crystalline and Molecular Structure of Palladium Acetylacetonate". Included is a translation by the Translation Section of the US Patent & trademark Office.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claim 8 is rejected under 35 U.S.C. § 112, second paragraph. Specifically, the term "bright" as recited on line 2 of claim 8 is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.
2. Claims 1, 3, 4 and 6-9 are rejected under 35 U.S.C. §103(a) over Hettiarachchi (US Patent 5, 818,893), referred to below as the '893 reference. Said '893 reference, according to the rejection, teaches a range that substantially overlaps with the range as claimed, and furthermore teaches all other limitations of claim 1. The rejection of claim 8 is subject to the above-referred-to rejection under 35

U.S.C. 112, second paragraph, where the examiner assumes that "bright" means "substantially non-oxidized". With regard to claim 7 the '893 reference does disclose Pt as one of the metals also useable for the same purpose and it would have been obvious, according to the rejection, to select the same concentration in terms of parts per billion for the alternative metal, which leads to the same substantially overlapping range for the concentration of ethanol as in the case of Pd. All other further limitations of the dependent claims are also anticipated, according to the rejection..

(10) Response to Argument

ad I and II. Objection to Drawings and to Claim 7 (page 5 of Appeal):

Objection to Drawings and to Claim 7 are not appealable, but instead only petitionable. See MPEP 706.01.

Ad III. Claim 8 rejected under 35 U.S.C. 112, second paragraph:

Appellant asserts (page 6 of Appeal) that the classification of a metal as "bright" is well known in the art. However, examiner already conceded this (see Final Office Action, pages 7-8). The issue is rather whether, as such, "bright" is a term of relative degree (page 8 of previous office action). The term is not defined by the claim, and, counter to Appellant's allegation, is nowhere defined in the Specification. On the contrary: the disclosure of surface components as being "bright *or* covered only by a native layer" (italics and underscore added by examiner for emphasis: page 6 of the Specification, lines 6-10 and 15-20) at the very least points away from the definition now

alleged by Appellant, as "being covered only by a native oxide layer". The claim language cannot possibly imply the alleged definition without introducing, at least in claim 8, a tautology. In other words: the claim language itself appears to confirm that no definition of "bright" is implied because otherwise claim 8 would fail to further limit the invention defined by claim 1.

Ad IV. Claims 1, 3, 4 and 6-9 rejected under 35 U.S.C. 103(a):

Appellant's arguments of traverse are two-fold: according to Appellant,

"1. The '893 Patent when viewed as a whole teaches away from the subject application (sic: interpreted as "subject matter defining the application").

2. The calculations set forth in the instant Office Action, and previous Office Actions, do not accurately recite the alcohol concentration that they purport to recite" (see page 7 of Appeal Brief).

Turning to specifics, the claimed process, according to a first argument (item 1. in the bottom paragraph on page 7 of the Appeal Brief) put forward by Appellant, "is distinct from the cited '893 reference because" the latter "discloses palladium concentrations and does not have recitation relating to the concentration of alcohol". However, as examiner had pointed out more than once, a concentration of ethanol in terms of parts per billion in reactor water is implied by the combination of:

(a) a disclosed preferred Pd concentration of between 1 ppb to 1000 ppb (=parts per billion) in the reactor water (for which examiner cited the pertinent portion in the '893 reference (i.e., col. 11, l. 23-25; see Final Action, page 5), and

(b) the disclosed method of arriving at mixing 52.6 mg of Pd acetyl-acetonate with 40 ml (=31.6 mg) of ethanol and afterwards adding a further 10 ml (= 7.9 mg) of ethanol, for which examiner cited the relevant portion of the same '893 reference (col. 9, l. 55 – 55-67; see Final Office Action, page 5).

Examiner maintains the calculation to be correct but apologizes for a typographical error: the ratio of Pd versus ethanol as calculated on page 5 of the Final Office Action, line 12, should be 0.2, not 0.02; however, the conclusion therefrom on lines 14-15 of page 5 that said ratio implies 5 to 5000 ppb ethanol in the reactor water is correct as stated, said ethanol concentration being a factor of about 5 greater than that of Pd, which was disclosed as between 1 and 1000 parts per billion (col., 11, l. 23-25). The reference to "1 kg" in lines 17-21 does not presume any particular mass or volume of the reactor water, but instead merely pertains to the conversion of the concentration to Appellant's own unit as claimed, i.e., μmoles/kg (see line 9 of claim 1). Examiner also notes that the purely numerical aspects of the calculation have not been questioned by Appellant and are not being questioned in the Appeal Brief.

By virtue of (a) and (b) the ratio of the number of parts of Pd divided by the number of parts of ethanol concentration is fixed, given the molar weights of Pd acetyl-acetonate and ethanol. Therefore, said first argument by Appellant does not persuade.

According to a related second argument by Appellant (item 2. in the bottom paragraph of page 7 of the Appeal Brief)."there is ambiguity relating to the method of dilution".

In particular, according to Appellant: "The '893 specification does not say to what extent the solution is diluted with water" (page 8 of Appeal Brief). Before going into the details of Appellant's reasoning examiner submits that the specific dilution process is only relevant to the extent it determines the ratio of Pd to ethanol, with reference to the foregoing discussion, given that the mixture will ultimately be added to the reactor water as specified in col. 11, l. 23-25, of the '893 reference, and that said ratio is indeed determined by the fixed number of parts of Pd divided by the number of parts of ethanol.

Appellant alleges that "the specification of the '893 reference does not specifically say to what solution 10 milliliters of ethanol are added" (page 8 of Appeal Brief). However, the specification, in the portion recited by examiner, states that 10 ml of ethanol are added to a solution obtained by dissolving 52.6 mg of Pd acetyl-acetonate with 40 ml ethanol to which an undisclosed amount of water is added first. Because only the ratio of Pd to ethanol is relevant for the conclusion of ethanol concentration in the reactor water, - this in light of the disclosed Pd concentration in the reactor water in col. 11, l. 23-25, the question about how much water is added first (i.e., before 10 ml more of ethanol is added) is completely irrelevant to the ultimate result in terms of ethanol concentration in parts per billion.

The Appellant also alleges ambiguity of the '893 reference with respect to the sentence "This is then diluted with water" (page 8 of Appeal Brief). Once again, this is irrelevant, as this only determines a solution subsequently injected into the reactor water (see col. 9, 62-67) while only the ratio of ethanol to Pd in the reactor water matters in determining whether the claimed range overlaps with the one found in the

prior art, given the disclosure of the Pd concentration in the reactor water in the prior art (col. 11, l. 23-25 in the '893 reference).

Appellant then refers to an alternative water-based suspension, which, however, does not detract at all from the method as disclosed first, and on that account alone is irrelevant.

Appellant adds the allegation that the '893 reference does not specify the concentration of any components once they have entered the reaction (sic: interpreted as 'reactor') system. However, as we have seen (see the cited portion in '893; i.e., col. 11, l. 23-25) the '893 reference specifically discloses the Pd concentration in the reactor water, which is the relevant portion of the reactor system, and hence this added allegation is false. The explanation by Appellant on said added allegation that "there is further ambiguity" (page 8 of Appeal Brief) because of the disclosure that "a water-based suspension can be formed, without using ethanol" merely refers to an alternative in the sense of a patentably distinct second embodiment in said '893 and hence cannot possibly detract from the embodiment cited in the rejection.

In summary of the arguments of appeal up to and including the forelast paragraph of page 8, no ambiguity in the '893 reference detracts from the teaching of one method of protecting components of a primary system of a BWR as otherwise defined by claim 1 of Appellant wherein the range of alcohol concentration significantly overlaps the range as claimed.

Appellant then asserts (page 8 of Appeal Brief, final paragraph) that "the reading of the '893 Patent as a whole, establishes both that there is a one (sic) initial palladium

concentration and no additional components added after the initial introduction of the palladium solution". However, this assertion is, as we have shown above, incorrect in at least one embodiment, i.e., the one referred to in the Final Office Action, see col. 9, l. 55-67, in which the Pd solution contains ethanol, and is defined with regard to the ratio of Pd versus ethanol, and is furthermore injected into the reactor water (loc.cit.), wherein preferably the Pd concentration is defined to be between 1 and 1000 parts per billion, from which examiner has shown through calculation (page 5 of the Final Office Action) that a concentration within the range as claimed logically follows.

That no further "reducing agents" are added as Appellant admits (page 9 of Appeal Brief) only further solidifies the established ratio of Pd versus ethanol (from which the ethanol concentration follows) as only any further additive such as said reducing agent just may otherwise upset said ratio.

In this regard the alleged contradistinction with "continuously feeding" (page 9 of Appeal Brief) is not persuasive: any injection of any liquid into any other (or the same) liquid is a continuous process by virtue of the continuity of any liquid medium down to the physically infinitesimal scale (truly microscopic scales, on the level of individual molecules, are clearly not in the scope of the invention, nor are they in the scope of the cited disclosures in the '893 reference) and no other reducing agents need to be added for the injection process. That no other reducing agents are added does not in any way detract from the presence of a reducing agent in a range of concentration that overlaps with the claimed range.

Examiner also draws attention to the extreme broadness of said claimed range (0.1 – 10 μmol/kg), said broadness implying that for practically all reductions to practice of applicant's invention it would also not be deemed necessary to add more alcohol. Furthermore, Appellant is reminded once again, as in the Final Office Action, that a *prima facie* case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art or when the ranges of a claimed composition do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties. In re Peterson, 65 USPQ2d 1379 (CA FC 2003). Clearly then, as long as a reference is not flatly contradictory within the confines of a particular embodiment with range overlapping the claimed range, there cannot possibly be "a teaching away" of said range. No such contradiction can be found in the '893 reference.

Appellant cites W.L. Gore & Associates, Inc. vs. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983) in support of Appellants allegation that '893 teaches away from the subject matter. Examiner responds by referring to In re Peterson as referred to in the preceding paragraph in which it is discussed that a *prima facie* case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art or when the ranges of a claimed composition do not overlap but are close enough such that one skilled in the art would have expected them to have the same properties. All other limitations, i.e., other than the range limitation on ethanol concentration are anticipated. The cited case law (aforementioned Gore vs. Garlock) is also irrelevant for the underlying case, because the primary reason for

holding that the district court erred was the markedly different behavior of different materials, not an overlapping range involving the same materials.

Appellant continues to state that "the '893 reference, read in its entirety, i.e., as a whole, teaches a specific amount of alcohol introduced into Boiling Water Reactor (BWR) and does not allow for additional amounts to be added, which teaches away from the subject application allowing continuous addition and excess amounts of alcohol" (page 9 of Appeal Brief). Examiner responds that, as explained above, no teaching away can be found in '893, wherein one embodiment of the method teaches in addition to all other limitations the concentration of alcohol in a range that substantially overlaps the range as claimed. That, as Appellant has asserted in the foregoing, another embodiment teaches no alcohol concentration is another matter, i.e., another embodiment of the invention as disclosed by the '893 reference, while, as has been mentioned before, "continuously feeding" is inherently met by the injection of any liquid into any other liquid by virtue of the continuous nature of liquids at least down to the physically infinitesimal scale, as opposed to the scale at which individual molecules are distinguished, while a description on the molecular scale is clearly beyond the scope of the application and also beyond the scope of the '893 reference.

Next, Appellant "asserts that the Office recognize established case law which characterized most chemical reactions and physiological activity as 'unpredictable'", with reference to In re Fisher, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970). Examiner responds by pointing out that a much more recent decision, In re Peterson, as cited overleaf, pertains exactly to a composition range, is of much more recent date and

hence should be taken as guide offered by the courts, particularly because the field of chemistry has progressed considerably in the 37 years since In re Fisher. Furthermore, "chemical reactions" are neither claimed nor relevant beyond dissolving a substance in water. Quite relevant to the composition of a solution, In re Peterson states unequivocally that an overlapping compositional range is at least a case of *prima facie* obviousness, as explained above. To provide further information on Pd-acetylacetonate examiner herewith has enclosed Knyazeva et al, "Crystal chemical data on chelate compounds of β-diketones", Zhurnal Strukturnoi Khimii, volume 11, number 5, pages 938-939, together with a translation provided by the Translation Services for Russian-English at the USPTO, providing information on the three-dimensional compositional geometry and density parameters of Pd-acetylacetonate, to show the distinctness of the acetylacetonate from ethanol or any other alcohol: therefore, equating the ethanol concentration with the one exclusively following from the addition of ethanol to Pd-acetylacetonate is justified. Furthermore, from said parameters and the disclosed quantity of 1 to 1000 parts per billion in the reactor water it is clear that the volume of the solvent to an extremely accurate degree equates to the volume of the solution, the difference being at most of the order of the square of the relative concentration of dissolved material, which is of the order of 10^{-12}.

Appellant further alleges (page 10 of Appeal Brief) the need for motivation to modify in any rejection under 35 U.S.C. 103(a). However, with reference to In re Peterson and its discussion above, examiner responds that, while all limitations other than the claimed range are met by the teachings of the '893 reference, the claimed

range is at least *prima facie* obvious over the range found in the prior art in the form of the '893 reference because said range in the prior art overlaps the range as claimed. Nothing in the arguments by Appellant to date is persuasive of error either in the calculation (page 5 of the Final Office Action) or reasoning that leads to the conclusion that because the '893 reference discloses Pd concentration in the reactor water (col. 11, l. 23-25) obtained through injection of a mixture of 52.6 mg of Pd-acetylacetonate (i.e., 0.17 millimoles) and 40 ml + 10 ml = 50 ml = 39.5 mg of ethanol (0.85 millimoles) diluted with water into said reactor water, in which mixture, *regardless of the concentration of water used for the initial dilution*, the relative concentration of Pd and ethanol is fixed, the reactor water necessarily contains ethanol in a range that significantly overlaps the (extremely broad) range as claimed. Appellant wants motivation to modify, yet nothing needs modification to meet all limitations other than the exact range while the range found in the prior art considerably overlaps the range claimed.

Appellant also asserts (page 10 of Appeal Brief) that "the calculation relied upon in the instant office action does not accurately depict concentration in a reaction system" (page 10 of the Appeal Brief), specifically, that (a) the '893 Patent does not clearly define" the preparation of the palladium (Pd) acetylacetonate injection solution" and that (b) "the palladium (Pd) concentration is the concentration in "that test solution" and does not take into account any concentrations once added to a reaction vessel". However, examiner responds ad (a) that, as shown by the calculation on page 5 of the Office Action, the preparation is defined sufficiently so as to determine the ratio of Pd to ethanol in said injection solution from the data on the weight of the Pd acetylacetonate

and the volume and hence the weight of the ethanol in the mixture, which is all that is necessary for concluding an ethanol concentration in the reactor water, because, counter to Appellant's allegation ad(b), the palladium concentration after injection of said injection solution into the reactor water is disclosed to be in a definite range (1 to 1000 parts per billion: see col. 11, l. 23-25) and hence is *not* a concentration in some "test solution".

As Appellant states, "the adding of a solution to the reactor vessel will, in fact, dilute the amount of components present" (page 10 of Appeal Brief); however, that dilution has been taken into account in the calculation on page 5 of the Office Action: the *injection solution* may have an undisclosed *absolute* concentration, of both Pd and ethanol. Yet, *the ratio of Pd to ethanol is fixed.* After injection *the absolute concentration* (in terms of parts per billion) *of the Pd in the reactor water is separately disclosed* (col. 11, l. 23-25). Because the injection itself does not change the ratio of Pd to ethanol the ratio of Pd to ethanol is the same in the reactor water as it is in the injection solution. No additional substances are either added or subtracted. From the absolute Pd concentration in the reactor then follows the concentration of ethanol in the reactor water.

In what appears to be his summary statement, Appellant alleges that because "the '893 disclosure teaches

1. Palladium concentration, and not alcohol concentration;

2. A water-based suspension can be formed, without using ethanol; and

3. No teaching or suggestion as to concentration alcohol (if any) after the Palladium solution is introduced into the BWR

Appellant asserts that the '893 reference does not have the requisite teaching or suggestion to render the subject application obvious".

Examiner responds, with reference to the discussion overleaf,

Ad 1.: that alcohol concentration is taught through a ratio of Palladium versus ethanol concentration in an injection solution injected into the reactor water, wherein Palladium is disclosed to have an absolute concentration, and hence the ethanol concentration in the reactor water is known also.

Ad 2.: a water-based suspension can be formed without using alcohol, according to the '893; however, said water-based suspension without alcohol is merely a species different from another species on which the Office Action has relied and in no way can be said to teach away from said other species of the disclosed method.

Ad 3.: Indeed, no teaching or suggestion as to any changes in the concentration of alcohol after administering the injection solution is contained in the '893 disclosure, and hence the alcohol concentration remains what is was upon injection of said injection solution.

In summary, examiner submits that none of points 1 through 3, nor any other arguments by Appellant is persuasive of error in the rejection under 35 U.S.C. 103(a).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Johannes Mondt, Primary Examiner (Art Unit 3663)

Conferees:

Ricardo Palabrica (Primary Examiner Art Unit 3663). FOR R/C PALABRICA
JACK KEITH
SUPERVISORY PATENT EXAMINER

Meredith Petravick (Chair of Appeal Conference).

LERNER GREENBERG STEMER LLP
POST OFFICE BOX 2480
HOLLYWOOD, FLORIDA 3302202480
(954) 925-1100